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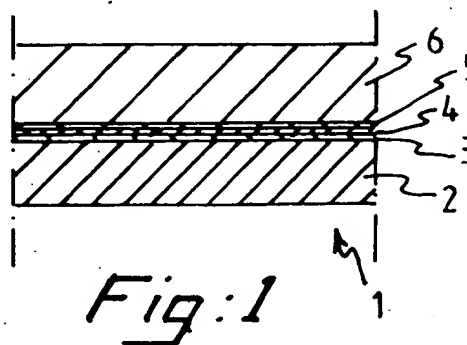
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54 Method for producing sheets for applying logos etc.

57 Method for producing a sheet specially suitable for applying designs such as logos, letters, names, words etc. to a flat substratum, such as the side of a car, which sheet comprises a first layer (2) which is covered at one side with an adhesive layer, and which adhesive layer is covered by a layer, a so-called release layer, which has little or no adhesion to the adhesive layer. A second layer (3), a so-called release layer, is applied to a sheet (2) after it has undergone a heat treatment, which second layer (3) shows good adhesion relative to the polyester film, in that after drying of the second layer (3) a thin third layer (4) or film of an ink or a paint of a desired colour is applied to said second layer (3), in that a fourth layer (5) which has good adhesion is then applied to said third layer (4), and in that, finally, this fourth layer (5) is covered by a fifth layer (6) consisting of a sheet of a material with poor adhesion relative to the fourth layer (5), the adhesive layer. The preference the first layer (2) or sheet is a stabilised polyester film which has undergone a heat treatment at a temperature between 150° and 300° C.



EP 0 503 738 A1

The invention relates to a method for producing a sheet specially suitable for applying designs such as logos, letters, names, words etc. to a flat substrate, such as the side of a car, which sheet comprises a first layer which is covered at one side with an adhesive layer, and which adhesive layer is covered by a layer, a so-called release layer, which has little or no adhesion to the adhesive layer.

Company names, words, logos, advertisements etc. have been applied to the sides of cars for some time, the designs to be applied being applied with the aid of a plastic sheet. The known method is that an adhesive layer is applied to one side of a sheet or film of vinyl, and that this adhesive layer is then covered with a layer of silicone paper. The sheet is then laid, with the silicone paper down, on a flat substrate, and the vinyl layer is then cut through to the silicone paper, the cutting through of the vinyl layer taking place in such a way that the designs, words or names are cut into it. All the vinyl which is superfluous is subsequently removed from the vinyl layer, and a so-called transfer tape is then used to transfer the letters to the place where they must be fixed, for example a car. This transfer tape comprises a sheet which has low adhesion on one side and is pressed with the adhesive side on the top of the cut-out letters on the vinyl. The silicone layer on the bottom side is then removed, so that the adhesive layer is exposed, following which these cut-out letters or logos or the like are applied to the correct place and, finally, the transfer tape is removed.

British Patent Application GB 2,187,023 describes an improved method for producing logos and the like from a vinyl layer, in which the vinyl layer used for the logo is covered at one side with a carrier layer and at the other side by a top layer, the three layers being interconnected by an adhesive layer. The adhesive layers are of such a composition that the adhesive layer between the top layer and the polyvinyl layer has less adhesion relative to the top layer and good adhesion relative to the polyvinyl layer, while the adhesive layer between the polyvinyl layer and the carrier layer has low adhesion relative to the polyvinyl layer and good adhesion relative to the carrier layer. The logos are now applied in mirror writing, and the top layer and the vinyl layer are cut through, while the carrier layer remains intact. In this embodiment the polyvinyl layer is already provided with the transfer tape.

A disadvantage of these known methods for applying designs is that in the course of time the vinyl shrinks, causing an adhesive edge to which dirt clings to appear around the designs. Another problem is that the letters are fairly thick and consequently lie on top of the surface. After the logos are applied, the different parts of the designs

will not always abut well, due to the shrinkage.

The object of the invention is a method for producing a sheet with which designs, such as logos, words, company names etc., can be applied to flat substrates, and the above-mentioned disadvantages do not occur.

The object of the invention is achieved with a method for producing a sheet in which a second layer, a so-called release layer, is applied to a sheet, for example a polyester film, after it has undergone a heat treatment, which second layer shows good adhesion relative to the polyester film, in which after drying of the second layer a thin third layer or film of an ink or a paint of a desired colour is applied to said second layer, in which a fourth layer which has good adhesion is then applied to said third layer, and in which, finally, this fourth layer is covered by a fifth layer consisting of a sheet of a material with low adhesion relative to the fourth layer, the adhesive layer. With such a sheet produced by this method it is very easy to make logos, advertisements, illustrations etc. and then apply them in a simple manner to flat substrates in particular, such as the side of vehicles or the like.

It is known per se to subject a polyester film to a heat treatment. Such a process is described, inter alia, in British patent GB 1,382,424, in which a method for heat treatment of a thermoplastic linear polyester film is described. However, the use of an ink layer or a paint layer combined with a sheet of, for example, a polyester film which has undergone a heat treatment means that the sheet will not shrink or stretch for a long time. Unlike a polyvinyl layer such as that used in British patent GB 2,187,023, an ink layer or a paint layer will not be able to stretch and consequently break. A great advantage of using an ink or paint layer instead of a polyvinyl layer is, however, that this layer can be much thinner and that such a layer will not shrink or stretch in time. This will eliminate the problem of black edges appearing around the logos, or where several parts of the logo abut because different colours have been used, these edges will remain properly abutting as time passes and not shrink as time passes, as occurs where polyvinyl layers are used, with the result that black edges appear because dirt is deposited on the adhesive layer which is exposed.

It is preferable to follow a method for producing a sheet according to the invention in which the first layer or sheet is a stabilised polyester film which has undergone a heat treatment at a temperature between 150° and 300°C and, after the second layer has been applied, the polyester film together with the second layer again undergoes a heat treatment at a temperature above 100°C. This prevents such sheets produced by the method according to

th invention from shrinking during storage, as a result of which the layers subsequently applied to them bulge, tear or do something of the kind, because these layers cannot undergo stretching or shrinkage.

The last, fifth layer is preferably a sheet of polyethylene which is siliconised on one side, so that said layer can easily be removed without the adhesive layer underneath being removed at the same time with the top layer.

A method for producing designs from a sheet produced according to the invention is preferably such that the designs are cut from such a sheet in such a way that the fifth, fourth and third layer are cut through and all parts of the third, fourth and fifth layer not belonging to the designs are then removed up to the second layer, the remaining parts of the fifth layer are subsequently removed and thereafter the designs are applied at the desired place to a surface, with the fourth layer facing the surface to be applied and, finally, the first layer is removed together with the second layer, so that the coloured third layer, a certain type of ink, is released.

The invention will be explained in greater detail with reference to the drawing. In the drawing:

Fig. 1 shows a cross-section through a piece of sheet according to the invention;

Fig. 2 shows a cross-section through a sheet and a transfer tape of the type generally used;

Fig. 3 shows in stages the method for applying designs to a flat substrate;

Fig. 4 shows the method for applying designs by the currently known method.

Figure 1 shows schematically in cross-section a piece of sheet 1 according to the invention. The sheet is made up of a layer of stabilised polyester film 2, which has thus undergone a heat treatment. A second layer 3, a so-called release layer, is applied to said polyester layer, said second layer consisting of a material which has good adhesion relative to the underlying layer of polyester 2. After this layer has undergone a heat treatment, a thin film 4 of an ink or a paint is then applied to it. This layer is then covered with a fourth layer 5, consisting of an adhesive layer which has good adhesion and, finally, this adhesive layer 5 is covered with a layer of polyethylene 6 which is siliconised on one side, as a result of which this sheet does not remain stuck to the adhesive layer 4.

Figure 2 shows schematically in cross-section a sheet 7 and a loose auxiliary sheet 8 or transfer tape. The sheet 7 is composed of a layer of vinyl 9 to which an adhesive or glue layer 10 is applied, and which adhesive layer 10 is covered with a sheet of silicone paper 11 as the carrier. The transfer tape is composed of a sheet 12 of a desired material to which an adhesive layer 13 with

a low adhesion is applied.

Figures 3A, B, C, D, E and F show the method according to the invention for producing designs. Figure 3A shows schematically in cross-section the sheet 1 according to the invention as shown in Figure 1. Figure 3B shows the same sheet from Figure 3A with incisions 14. The designs must be applied in mirror writing, unlike the method generally used now. Figure 3C shows the same sheet after the superfluous material 15 has been removed from the top layers 4, 5, 6, so the parts of the design or letters which are mirror written are not removed. Thereafter, just before the designs are to be applied, the fifth layer 6 is removed all over (Figure 3D), and the sheet 2 with designs is then turned over (see Figure 3E) and applied to the surface 16 to be covered, following which, finally, the polyester film 2 with adhesive layer 3 is removed, so that the designs 4 with the adhesive layer 3 adhere to the substratum 16.

In a preferred method according to the invention the layer 2 of polyester is made of a transparent material. That makes it possible to remove instead of the superfluous material 15 around the designs, only that parts of the layer 6 which cover the designs and the other signs such as letters. Then it is possible to position the letters and designs cut out, exactly on the spot where it is desired. As the layer 2 is transparent and the parts of the layer 6 are removed only there where the designs are, then it is easy to see through the transparent layer 2 where the designs are. As all the parts around the designs are still covered with the layer 6, so no parts of the layer 4, where the layer is removed can reach the surface 16. When the design is positioned than by pressure of for example the fingers the design can be pressed against the surface 16 and will then stick to it with the adhesive layer 3 which is on top of it.

Figures 4A, B, C, D, E and F show schematically how the method was carried out hitherto. Figure 4A shows a sheet of vinyl like that shown in Figure 2. The desired incisions 14 are made in this sheet 7 through the vinyl layer 11 as shown in Figure 3B. Thereafter (see Figure 3C), everything except the desired designs with the adhesive layer is removed.

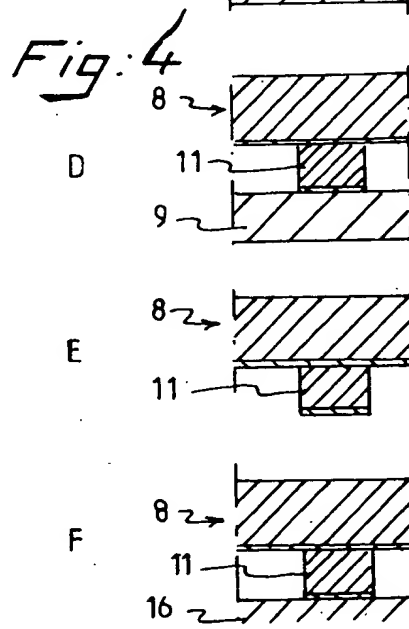
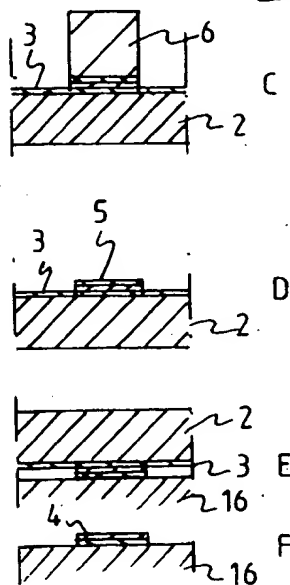
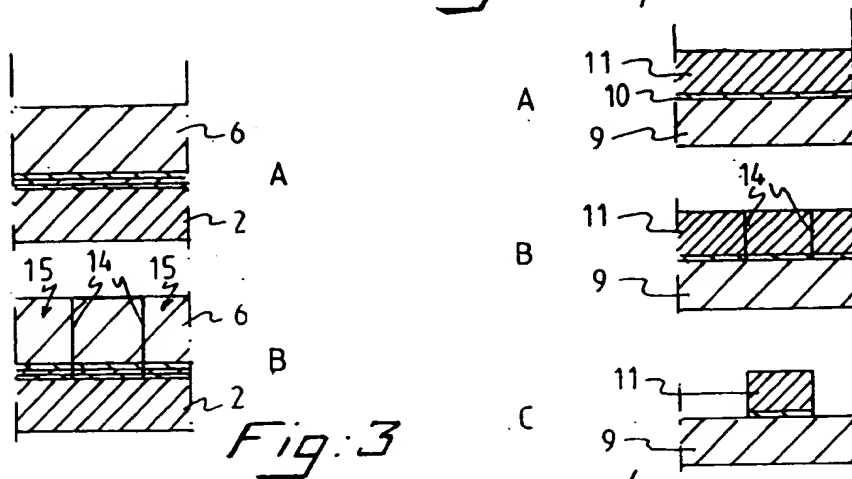
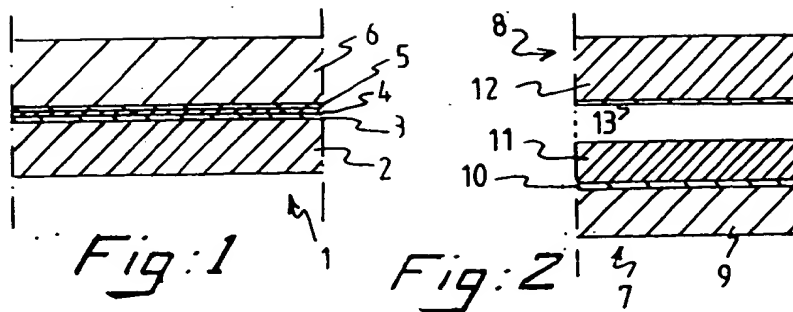
A transfer tape 8 (Figure 3D) is then applied to the cut-out designs, which in this case do not have to be cut out or punched in mirror writing, and the designs are then removed from the silicone paper and applied to a desired substratum 16.

Very thin layers or films 4 can be produced and applied with the sheets 1 produced according to the invention. The advantage of these thin applied films 4 is that they retain their shape with the passage of time, thus they do not shrink, which means that the adhesive layer is not exposed,

which is often the case with the method known until now and shown in Figure 4. If the adhesive layer is exposed, dirt sticks to it, so that black edges occur around the designs applied. The sheets produced according to the invention also make it possible to have far more colour variations than with the sheets known hitherto.

Claims

1. Method for producing a sheet specially suitable for applying designs such as logos, letters, names, words etc. to a flat substrate, such as the side of a car, which sheet comprises a first layer which is covered at one side with an adhesive layer, and which adhesive layer is covered by a layer, a so-called release layer, which has little or no adhesion to the adhesive layer, **characterized in that** a second layer (3), a so-called release layer, is applied to a sheet (2), for example a polyester film, after it has undergone a heat treatment, which second layer (3) shows good adhesion relative to the polyester film, in that after drying of the second layer (3) a thin third layer (4) or film of an ink or a paint of a desired colour is applied to said second layer (3), in that a fourth layer (5) which has good adhesion is then applied to said third layer (4), and in that, finally, this fourth layer (5) is covered by a fifth layer (6) consisting of a sheet of a material with poor adhesion relative to the fourth layer (5), the adhesive layer.
2. Method for producing a sheet according to Claim 1, **characterized in that** the first layer (2) or sheet is a stabilised polyester film which has undergone a heat treatment at a temperature between 150° and 300° C.
3. Method for producing a sheet according to one of Claims 1 or 2, **characterized in that**, after the second layer (3) has been applied, the polyester film (2) together with the second layer (3) again undergoes a heat treatment at a temperature above 100° C.
4. Method for producing a sheet according to any of Claims 1, 2 or 3, **characterized in that** the second layer (3) or non-stick layer comprises at least 'Araldite, a hardener and one or more solvents such as benzene.
5. Method for producing a sheet according to any of Claims 1, 2, 3 or 4, **characterized in that** the third layer (4) is a cast film consisting of pure ink.
6. Method for producing a sheet according to any of Claims 1, 2, 3, 4 or 5, **characterized in that** the fifth layer (6) is a sheet of polyethylene which is siliconised on one side.
7. Method for producing designs from a sheet (1) according to any of the preceding claims, **characterized in that** the designs produced from a sheet (1) are cut according to the invention in such a way that the fifth (6), fourth (5) and third (4) layers are cut through and all parts of the third (4), fourth (5) and fifth (6) layers not belonging to the designs are then removed up to the second layer, the remaining parts of the fifth layer (6) subsequently being removed and thereafter the designs being applied at the desired place to a surface with the fourth layer (5) facing the surface (16) to be applied, while the first layer (2) is, finally, removed together with the second layer (3).
8. Method for producing designs from a sheet (1) according to any of the claims 1 - 6, **characterized in that** the designs produced from a sheet (1) are cut according to the invention in such a way that the fifth (6), fourth (5) and third (4) layers are cut through and all parts of fifth (6) layer belonging to the designs are then removed, and thereafter the designs being applied at the desired place to a surface with the fourth layer (5) facing the surface (16) to be applied, while the first layer (2) is, finally, removed together with the second layer (3) and the remaining parts of the fifth layer (6) being removed.
9. Method according to any of the preceding claims, **characterized in that** several sheets of different colours are placed on each other and a desired design, for example a logo, is cut out or punched through all layers of the sheets (1), so that all parts of the logo abut well and have the desired colours.
10. Sheet produced according to any of the methods from Claims 1 to 6.
11. Designs produced according to any of the methods of Claims 7, 8 or 9.





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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 0676

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CLS)
Y,D	GB-A-2 187 023 (GERBER SCIENTIFIC PRODUCTS) * page 1, line 92 - page 3, line 98 *	1,2,4-11	B44C1/16 B44C1/17
Y,D	GB-A-1 382 424 (AGFA-GEVAERT N. V.) * page 1, line 10 - page 1, line 84 *	1,2,7,8, 10,11	
Y	EP-A-0 232 225 (CIBA-GEIGY AG) * page 1, line 1 - page 1, line 10 * * page 8, line 6 - page 8, line 27 *	4	
Y	EP-A-0 232 959 (REXHAM CORPORATION) * column 4, line 5 - column 5, line 4 *	5,9	
Y	US-A-3 518 158 (A. R. HURST) * column 2, line 5 - column 2, line 35 *	6	
			TECHNICAL FIELDS SEARCHED (Int. CLS)
			B44C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 09 JUNE 1992	Examiner DOOLAN G. J.
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